Mobile Technology in a Clinical Setting

Kara Holleran[1], John Pappas[1], Hong Lou[1], Pat Rubalcaba[1], Rita Lee[1], Steve Clay[1], Janice Cutone[1], Steve Flammini[1], Gil Kuperman MD, PhD[2], Blackford Middleton, MD, MPH, MSc[2,3]

[1]Application Development, [2]Clinical Informatics Research & Development
Information Systems Department, Partners HealthCare System,
[3]Brigham & Women's Hospital, Harvard Medical School, Boston, MA

INTRODUCTION

Wireless technology can offer clinicians access to the latest patient data when they are located outside of the hospital campus. It allows physicians to be more effective with their time by enabling a new method of delivering clinical information, thus improving patient care. Imagine being stuck in traffic, or at a conference in another state, when a call comes in for the patient's latest lab results. With a wireless handheld device, and a web-based application, the physician can access this information in minutes.

METHODS

In an effort to evaluate this technology Partners Healthcare System developed a web-clipping application that could be installed on a handheld device, in this case a Palm VII, and accessed through wireless connectivity. The PDA Viewer allows users to view patient lab results, radiology and transcribed reports. All patient data is retrieved in real time. The Partners Phone Directory (PPD), a comprehensive listing of all staff members, with their telephone numbers, email addresses and pager numbers, is also accessible. Users can send text pages directly from the handheld device.

A six-month pilot study was initiated to evaluate the usability, performance and feasibility of this manner of access. Twenty-one physicians from Brigham & Women's Hospital and Massachusetts General Hospital were selected to participate. The roles of the participants ranged from residents, to department heads, to chiefs of staff, with varying specialties and backgrounds. Each participant was given a handheld device and access to the applications. Support was available during these six months for any problems related to the handheld device and our systems.

Security measures were incorporated into the system design. System logon and application authorization were required to authenticate the users and their access. Additional security features included system timeout, application auditing, and suppression of confidential patients.

Upon completion of the pilot program, participants were asked to complete a five-page survey. Twenty of the twenty-one participants responded. Most respondents (12 out of 20) stated that the ability to access real time patient data anytime, anywhere, was extremely helpful. The majority of participants used the handheld while off campus, such as traveling or at an off site clinic. Lab results were the most favored patient result available, followed by radiology reports, and discharge summaries.

System usage was low, averaging 11-20 accesses for clinical data and 21-30 for the phone directory per user in the six months. Users reported difficulty in reading the data due to the small form factor and font size. However, the largest obstacle to the usefulness of the wireless application was speed. Many users reported that is was simply too slow. (16 out of 20) Signal strength was also an issue for users.

However, many participants stated that when it was used, it was highly effective. The reassurance of being able to access clinical data when away from a computer received a high mark.

CONCLUSION

Most physicians were enthusiastic about the possibilities of wireless technology, however were disappointed with the performance currently provided. More than half felt as though this was a worthy addition to their clinical toolkit, and sought to have continued access to the system, even with its limitations.